

$$R_{avg} = \frac{\sum_{i=1}^n \sum_{j=1}^m R_{ij}}{n \times m}$$

Fig. 4

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix} = \begin{bmatrix} X_{r, max} & X_{g, max} & X_{b, max} \\ Y_{r, max} & Y_{g, max} & Y_{b, max} \\ Z_{r, max} & Z_{g, max} & Z_{b, max} \end{bmatrix} \begin{bmatrix} R \\ G \\ B \end{bmatrix}$$

Fig. 5

Fig. 5 is a block diagram of a lighting control system. The system starts with an input AVS (Audio Visual Signal) entering a Content Analysis (CA) block. The CA block is connected to a Feature Extraction (FE) block. Below the CA block are two memory blocks: HD (Hard Disk) and MEM (Memory). The output of the FE block is connected to a series of processing blocks: 10 (RUR Mapping Transformation Circuit), 18 (Ambient Lighting Production Circuit), an Ambient Lighting Space Lookup Table (LUT), and User Interface & Preferences Memory (U2). The output of the U2 block is connected to D88 (Lamp Interface Drivers). The D88 block outputs to a series of 88 (Light ID = 1 ... Ambient Light Sources ... N) light sources.

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix} = M_1 \cdot \begin{bmatrix} R \\ G \\ B \end{bmatrix}$$

Video Display D

*Fig. 6*

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix} = M_2 \cdot \begin{bmatrix} R' \\ G' \\ B' \end{bmatrix}$$

Ambient Light Sources 88

*Fig. 7*

$$\begin{bmatrix} R' \\ G' \\ B' \end{bmatrix} = M_2^{-1} \cdot M_1 \cdot \begin{bmatrix} R \\ G \\ B \end{bmatrix}$$

*Fig. 8*

-- Prior Art --

$$M = \begin{bmatrix} S_r X_r & S_g X_g & S_b X_b \\ S_r Y_r & S_g Y_g & S_b Y_b \\ S_r Z_r & S_g Z_g & S_b Z_b \end{bmatrix}$$

*Fig. 9*

$$\begin{bmatrix} S_r \\ S_g \\ S_b \end{bmatrix} = \begin{bmatrix} X_w \\ Y_w \\ Z_w \end{bmatrix} \begin{bmatrix} X_r & X_g & X_b \\ Y_r & Y_g & Y_b \\ Z_r & Z_g & Z_b \end{bmatrix}^{-1}$$

-- Prior Art --

*Fig. 10*

$$\begin{bmatrix} S_r \\ S_g \\ S_b \end{bmatrix} \begin{bmatrix} X_r & X_g & X_b \\ Y_r & Y_g & Y_b \\ Z_r & Z_g & Z_b \end{bmatrix} = \begin{bmatrix} X_w \\ Y_w \\ Z_w \end{bmatrix}$$

-- Prior Art --

*Fig. 11*

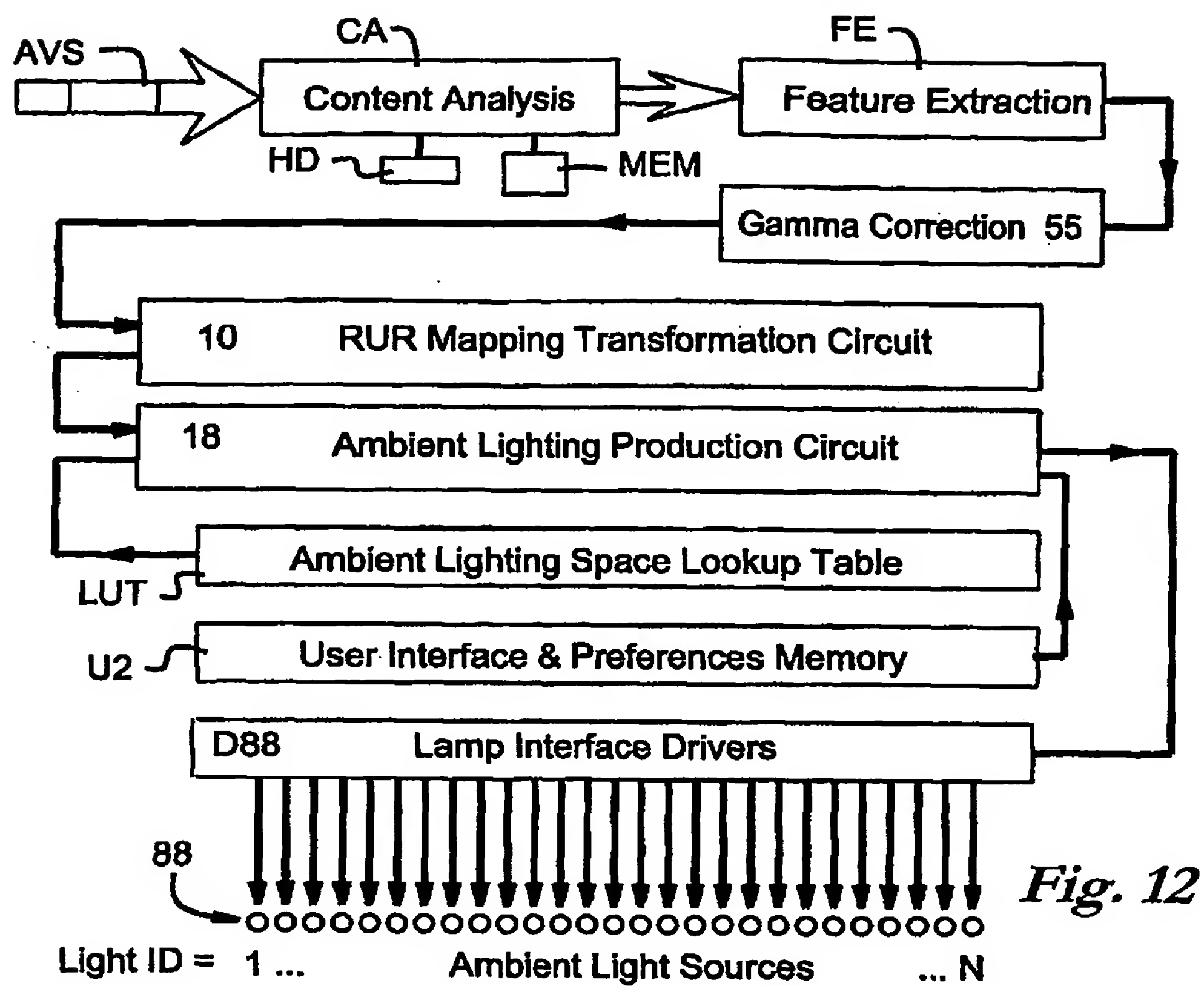


Fig. 12

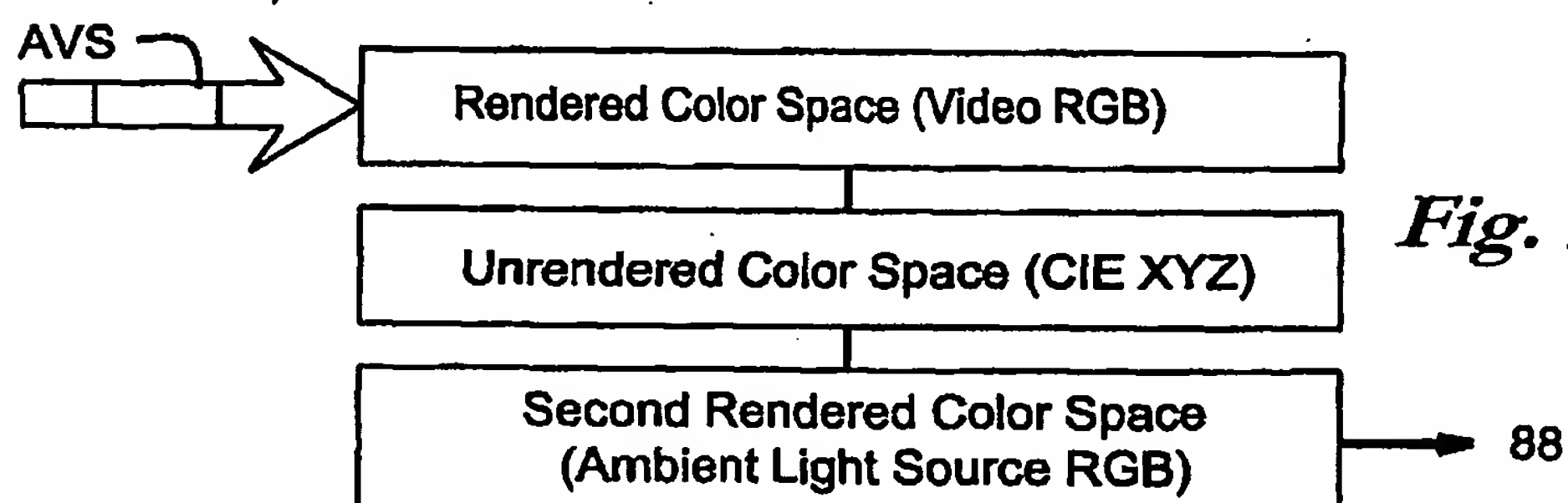
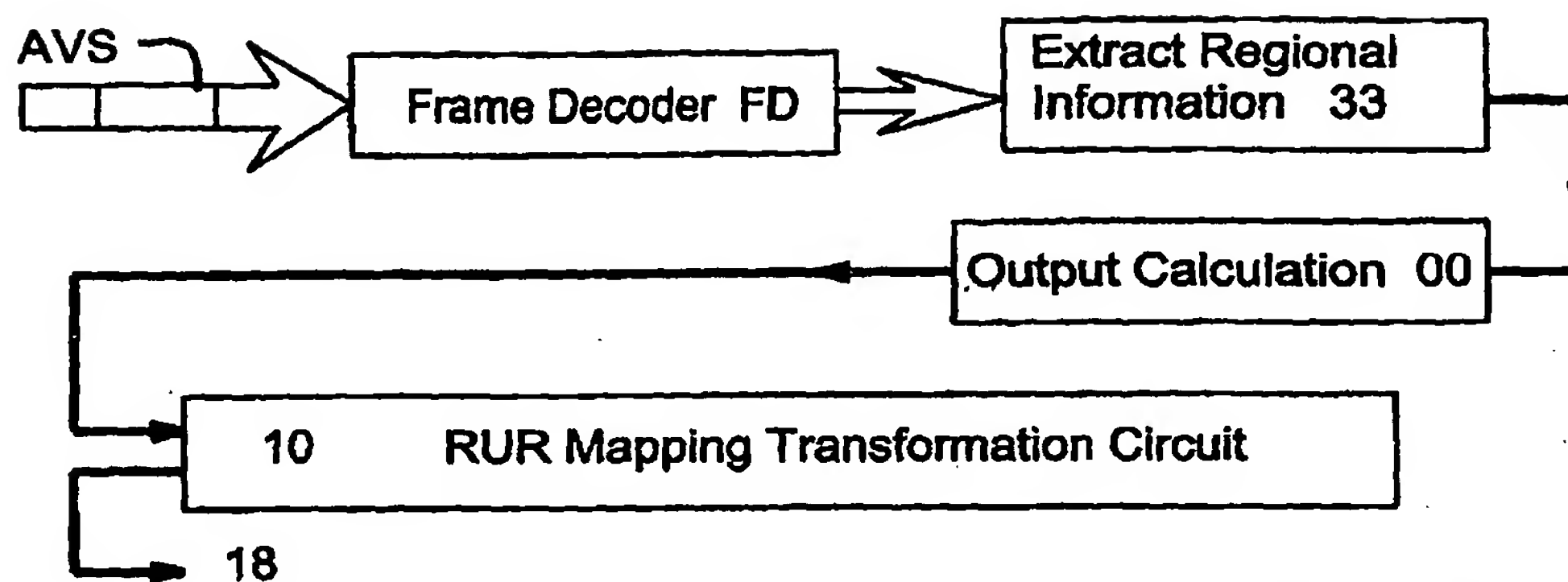
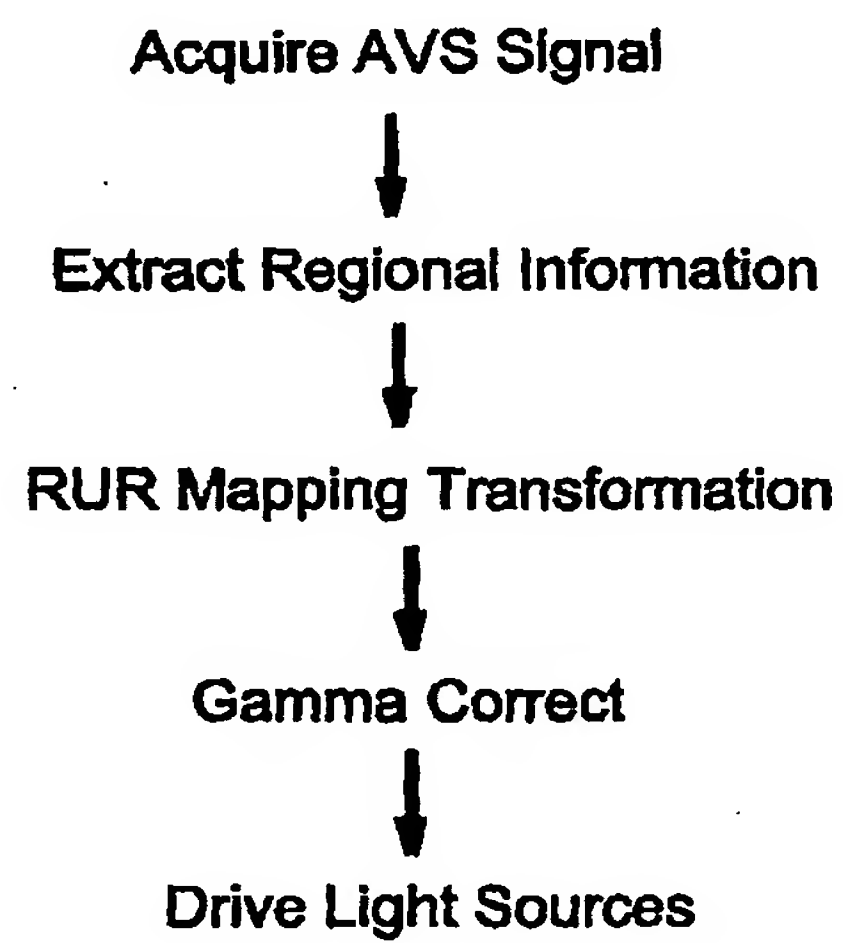
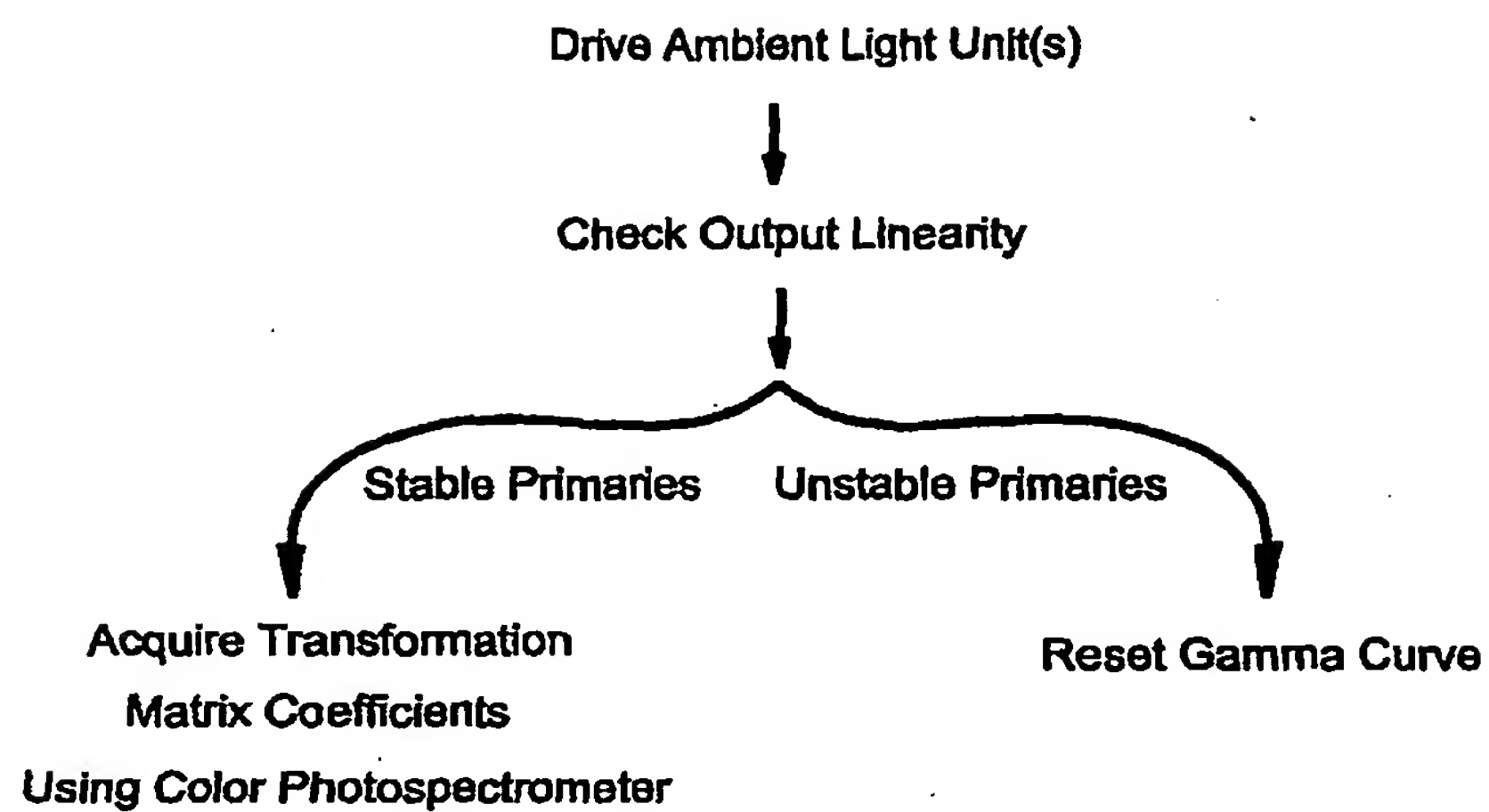
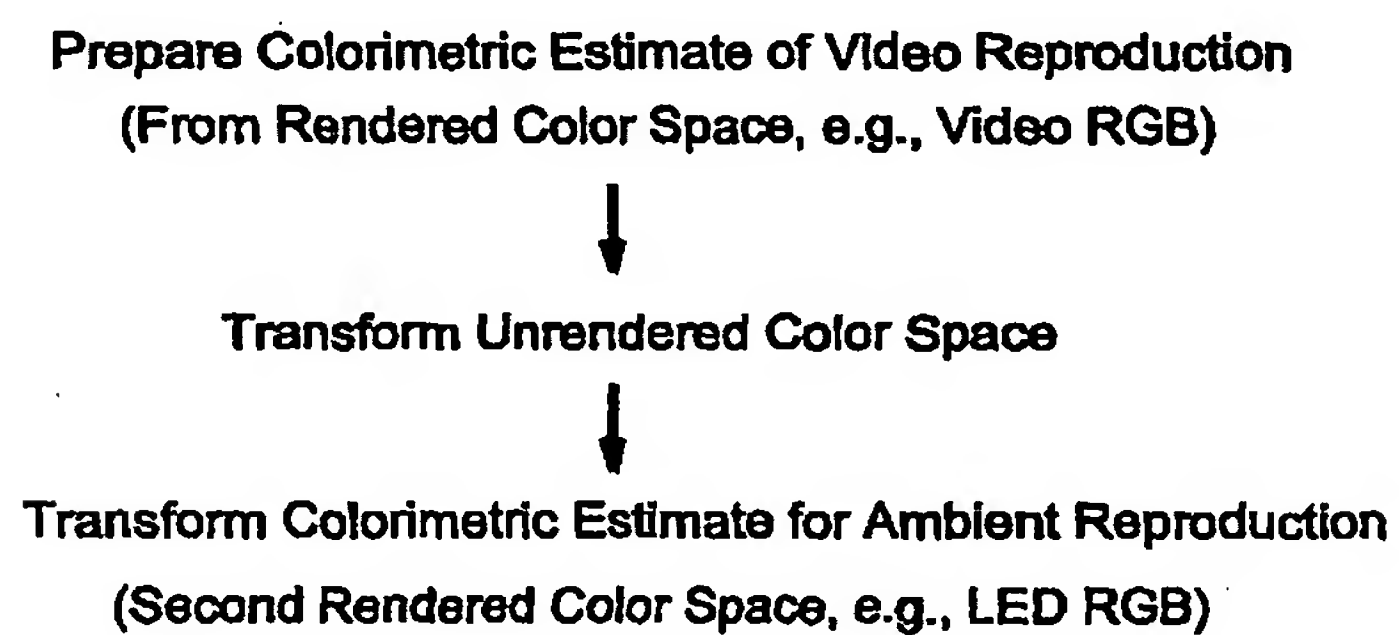


Fig. 13

*Fig. 14**Fig. 15*



**Fig. 16**



**Fig. 17**